

WATERSHED WRAP

Semi-annual newsletter from the Coeur d'Alene Tribe's Fish & Wildlife programs describing watershed management efforts. Offering readers food for conversation and paper for wrapping!

Spring / Summer 2016

(Vol. 18 No. 1)

Pike management enters second year of implementation

By Jon Firehammer, Fisheries Research Biologist

ast research and monitoring efforts found pike, a non-native species illegally introduced into the Coeur d'Alene basin in the mid-70's, to be a major predator on cutthroat trout while they live in the lake. Interactions between these species likely explain the low numbers of adult trout that have been found to return to area streams to spawn. As a result, the Tribe introduced measures in the lake beginning last year that they felt would reduce pike predation and support cutthroat trout recovery. Those efforts continue this spring.

In Windy Bay, the Tribe's Fisheries Program initiated a 3-year pilot suppression effort, whereby pike were to be removed over approximately six weeks each spring. During this period, migratory cutthroat trout are moving through shallow waters of the bay to ascend Lake Creek to spawn. Cutthroat are extremely vulnerable to predation during this migration because pike also spawn in early spring and are concentrated in large numbers in the shallow waters of the bay through which the trout are moving. Fisheries staff conducted the removal efforts by setting gill nets overnight along shorelines of the bay and retrieving the captured pike the following morning. In 2015, 308 northern pike were captured by gill netting efforts. According to

estimates of the number of pike living in the bay, this was likely over 75% of the population.

Employees with Idaho Fish and Game, who are collaborating with the Tribe on the Windy Bay suppression effort, tagged 234 of the captured pike and transported them up north to Cougar Bay, where they would be accessible to the popular sport fishery in that area. According to the state agency, tag returns have indicated that anglers have harvested approximately 30% of the translocated fish and that most of the fish were caught close to where they were released. However, during the 2015 spring netting efforts, two of the transported pike were recaptured back in Windy Bay only three weeks after being released in Cougar Bay. Although this number is low, the objective of the suppression effort is to reduce the number of pike in Windy Bay, not temporarily move them out so that they can return at a later date. Removal efforts in 2016 are planned to begin on March 14, and we hope to see fewer pike captured in our nets, indicating that the 2015 efforts were a step in the right direction.

LOOKING FOR MORE INFORMATION?

Fisheries Facebook Page:

www.facebook.com/cdatribe.fishandwildlife

Fisheries Website:

http://www.cdatribe-nsn.gov/natural/Fisheries/Fisheries.aspx

Furthermore, if we see more pike that were tagged and transported in 2015 appear in our nets deployed this spring, then translocation may have to be given serious re-consideration as a viable strategy.

Meanwhile, in the southern end of Coeur d'Alene Lake, anglers can still receive cash for northern pike harvested and turned in to the Heyburn State Park check station until the end of May. Unlike the suppression effort in Windy Bay, this sport reward program is not intended to substantially reduce the number of pike but to better understand their abundance, movement patterns, and seasonal diets. Pike are more numerous in the southern lake than in Windy bay, and more information is needed before an effective suppression strategy can be developed. The Fisheries Program hopes that such information can be gained by asking anglers to participate in the research efforts. In the fall of 2015, 155 pike were turned in to the check station and over \$1100 of reward monies were distributed. Twenty-eight different anglers participated in the program last fall, and we hope to seem more participation this spring when pike fishing ramps up again. As an incentive, there are still a lot of tagged bonus fish out there worth between \$50 and \$500, and the more pike that are harvested the more we learn about this population roaming the southern lake. Rules of the sport reward program can be found on the Fisheries Facebook page and website, at the check station at Heyburn State Park, and at the kiosks at the various boat ramps along the southern end of the lake.♦

Longer lives for beaver dams

By Gerald I. Green, Wildlife Biologist

ams built by beaver create habitats for an amazing assortment of life forms, from plants, birds, amphibians and mammals to native fish. These results are brought about because dams maintain the functions of wetlands and prevent the rapid loss of water from streams and floodplains. Water held behind beaver dams remains available to support stream flow through the dry season. Several studies have documented streams changing from intermittent, where they flow only during rainy

seasons, to perennial, with water flowing consistently year round.

Of particular interest to the Hangman Restoration Project is the potential for beaver dams to increase base flow and reduce stream temperatures. These are two of the most significant factors that inhibit widespread distribution of native trout in the watershed. But the beneficial changes that result from beaver dams may not accumulate rapidly because beaver dams don't seem to persist through the floods that push through the stream channel. This is a perfect example where reflecting on the events of the past can provide valuable lessons for the future.

Currently, the Hangman stream channel is very unstable. During much of the last century, stream channels were commonly deepened and straightened. While this helped quickly move water off the landscape, allowing for crop production in former floodplains and wetlands, it had the troubling side effect of containing the energy of floods within the confined, modified channels. A stream "locked" in such a configuration will continue to erode its bed and banks until a new floodplain is formed that is large enough to dissipate the energy carried by the largest floods. This leaves much of the most productive valley bottoms in a state of constant flux as the former wet floodplain becomes a much drier terrace.

Hangman Creek and many of its tributaries are still in the initial stages of this process which could take decades to run its course. The time involved is extremely quick relative to other geologic processes, like soil building, but is slow relative to normal human life spans. Given that channel widening is still in its early stages, there remains a very real opportunity to reverse the loss of valuable soils to erosion and the subsequent degradation of water quality.

Beaver, sometimes called nature's engineers, can play a key role in benefitting the natural resources of the reservation (with the added benefit that they work for free). But they face several major challenges in doing what they do best. Confinement of the frequent floods within the current Hangman channel focuses the full brunt of flood flows on any beaver dam that is built within the channel. Also, given that native vegetation was largely removed from adjacent floodplains at the same time that streams were channelized, beaver are left with very little material to work with in constructing dams. Consequently, the

few dams that exist are small and poorly reinforced. It is no surprise that these dams tend to blow out in annual flood events. But in order for the benefits of beaver dams to accrue for future generations, they have to persist from year to year.

The Hangman Restoration Project began experimenting with reinforcing natural beaver dams in 2012 when several dams were treated in lower Sheep Creek (a small tributary), and then expanding the effort in 2013 as dams were treated within the mainstem of Hangman Creek. Our approach followed other efforts to stabilize beaver dams in systems such as the John Day River of Oregon. Dams are reinforced by a series of wooden fence posts that are driven through the beaver dams and as deep into the stream bed as possible using a hydraulic post driver.



Wooden fence posts driven into a beaver dam constructed within the Hangman Creek stream channel.

Since flood waters move with such force through the current configuration of the Hangman channel, our first efforts focused simply on determining whether the wooden posts used for reenforcement would provide stability from year to year. There was concern that the posts themselves would be washed out of the channel. Four dams were reinforced in Sheep Creek in 2012. In 2013, we reinforced a single dam in the mainstem Hangman Creek, then another in 2014 and another in 2015. To date, the posts have remained in place and all the beaver dams have persisted despite having to withstand the full force of flood waters. We selected additional dams to monitor in addition to the dams that were reinforced. Dams that were not reinforced have not persisted

through the winter/spring wet seasons. We will expand this experiment incrementally before applying the technique widely in the Hangman Watershed beginning in 2017.

The purpose of reinforcing beaver dams is not simply to help beaver, but to restore a productive native trout fishery to Hangman Creek. The sequence of deep pools and riffles that are characteristic of beaver dam complexes are noted for their abundant trout populations. Currently, our focus in Hangman is conservation and recovery of the native redband trout. And while Hangman has potential to support a productive redband fishery, the redband itself is a resident cousin to the steelhead that migrate to the ocean and back. So the long term objective of this beaver dam reinforcement is not only to provide habitat for native, resident trout, but also to provide habitat for steelhead and even salmon one day.

When we first initiated the Hangman Restoration Project, this notion of steelhead and salmon returning to the watershed was an aspirational goal and a distant dream. But now, with the pending renegotiation of the treaty between the United States and Canada that directs the management of the Federal dams along the Columbia River, and the increasing interest in providing anadromous fish passage in the future management of those dams, the return of anadromous fish to the Spokane River and Hangman Creek is not just a faint, distant possibility. We are proceeding carefully, but we also must work quickly to prepare habitats within Hangman watershed streams for the return of anadromous fish. In this endeavor there is no better teacher than the beaver. •

Coping with a changing environment

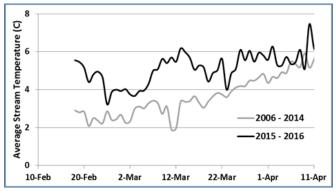
By Thomas Biladeau, Habitat Restoration Biologist

nlike terrestrial animals, trout are restricted to their home range and must have the resiliency to survive in a changing stream environment. Throughout history, the fish in the northwest have survived ice ages and enormous flood events repeated many times. Trout can adapt to changing environments over long and short time periods through the development of different life-history traits. By this, I mean that individuals within a population can have

different characteristics with regard to how they breed, where they reside and when or where they migrate. This helps buffer the species as a whole from extirpation due to a constantly changing environment.

The last two years we have witnessed an especially mild winter coupled with abnormally high temperature persisting through early spring and into summer. It is normal in lower elevations to have above freezing temperatures during the winter; however it is more unusual to have such warm temperatures persist through February and into the spring. With this early warming trend, we have seen a response in trout behavior that is quite dramatic.

The trout in the Hangman Creek watershed are spring spawners, typically waiting until streams have warmed up to around 4 degrees Celsius (40 °F) before moving upstream to breed. This typically occurs in late March. During the last two years however, we have observed spawning adults begin to ascend streams in mid-February with the intent to spawn in waters that are warming abnormally early. This type of behavior is a perfect example of how trout can adapt from one season to the next, simply by changing the timing of when they migrate and reproduce. By spawning early, their eggs will inevitably hatch early and give the juvenile fish a better chance to survive through a projected hot summer.



Trends for stream temperatures in tributaries of Hangman Creek indicate early season warming, consistent with many climate change predictions.

There are limits to what a trout can do however when adapting to a changing stream environment, especially when it comes to rising summer temperatures coupled with drought conditions. There is no benefit to a fish to spawn early if there is no cool water refuge for them or their offspring to reside in

during the summer. For this reason, it is important that our restoration actions continue to include a plan to shield the stream from prolonged periods of rising temperatures and drought.

Salmon for Hangman Creek

By Gerald I. Green, Wildlife Biologist

he Hangman Restoration Project was initially submitted to the Northwest Power Planning Council (now the Northwest Power and Conservation Council) for science review and consideration for funding in the year 2000. The Project was subsequently accepted and funding through the Bonneville Power Administration began in 2001. In that original project proposal the stated primary goal was:

Protect and/or restore stream habitats throughout the Hangman Watershed on the Coeur d'Alene Indian Reservation in order to support the restoration or reintroduction of native fish populations that are reduced from their original abundance.

That goal was intentionally rather vague because we did not know much about the status of native trout remaining in the watershed. Additionally, the primary objective of the Project was thought by some to be too outlandish to openly state in a document that would undergo thorough review. It was not until the 2007 Project submittal that the primary goal was further refined with the following statement:

While the short-term goal of the project was to substitute for anadromous fish losses, the ultimate goal remains to prepare the Hangman Watershed for the eventual return of salmon to the Spokane Subbasin.

The history of salmon occurrence in Hangman Creek and a discussion of traditional fishing sites near what is now Tekoa, Washington was reviewed in the Tribe's original Hangman Restoration Project proposal. This history was well understood by the Tribe, but over the last decade and a half non-Tribal residents of this

area have consistently expressed surprise at learning that salmon were once a part of this landscape. And, initially, the idea that they might one day return was so unlikely that no mention of the notion was made in the now sixteen year old original project proposal.

From a personal perspective, I initially thought fifty years would pass before anyone seriously discussed the return of salmon to the Spokane Subbasin and Hangman Creek. But a few changes in the region have prompted discussion about salmon passage into the blocked areas of the upper Columbia River Basin. First, the Columbia River Treaty between the United States and Canada is scheduled to expire in 2024. This treaty governs the establishment and operation of dams in the U.S. and Canada for both power generation and flood control across the international boundary. Since both the U.S. and Canada benefit from cooperative management of the Columbia River, there is no serious intent to simply let the Treaty expire. However, U.S. Tribes and Canadian First Nations of the Columbia Basin have taken the initiative to push for consideration of ecological function, which includes salmon passage, in managing the hydropower system along with power production and flood control when the treaty is renewed in 2024. As part of this region wide discussion, the Northwest Power and Conservation Council included in its most recent 2014 Program a priority to:

Explore opportunities to increase upper Columbia Basin salmon through reintroduction into blocked areas (i.e. above Chief Joseph and Grand Coulee); enhancing fish passage; and habitat improvements.

Columbia Basin



Along with those national efforts, the Upper Columbia United Tribes, which includes the Coeur d'Alene Tribe, along with a number of First Nations produced a paper titled **Fish Passage & Reintroduction into the U.S. and Canadian Upper**

(http://www.ucut.org/Fish_Passage_and_Reintroduction_ninto_the_US_And_Canadian_Upper_Columbia_River4.pdf). This paper suggests a plan for setting priorities and identifies research needs to achieve salmon reintroduction above Chief Joseph and Grand

Coulee. The paper also suggests conducting a thorough review of the latest advancements in fish ladders, turbine screens, spill processes, floating surface collectors and other technologies that promote fish passage over dams. One technological application that appears both successful and entertaining is the Whooshh Fish Transport System. A visit to the YouTube video titled Whoosh a New Era in Fish Passage HD:

(https://www.youtube.com/watch?v=WSmFXFEnAkc) will provide a good overview of that tool. Increasingly, there are feasible alternatives for providing fish passage without requiring significant changes in hydropower operations.

On the ground in the Hangman Watershed, the Coeur d'Alene Tribe's Hangman Restoration Project staff have removed drain tiles, restored stream channels, planted favored beaver foods like aspen and willow, reinforced beaver dams, reactivated flood plains, and a variety of other tasks with the expectation that these actions will improve habitat for native trout and prepare the land for the return of salmon.

Until recently, we thought of salmon returning to Hangman Creek as an event that would occur in some far distant future. But Tribal Natural Resource Staff are now discussing the progress toward salmon reintroduction with other UCUT Tribes. All these events have added urgency to the restoration work. We

cannot predict when salmon will return, we cannot even guarantee that they will return, but suddenly the prospect seems real and much closer. There is so much work that needs to be done to prepare, and it now seems that time is of the essence.

Albeni Falls wildlife mitigation project update

By Thomas Prewitt, Wildlife Habitat Biologist

he Albeni Falls Wildlife Mitigation Project (AFWM) has been busy improving wildlife habitat on both the Reservation and in the Tribe's ceded territory over the last several years. To help offset lost habitat from construction of the Albeni Falls Dam, the Tribe has acquired lands known as Wildlife Mitigation Units (WMUs) using funds from the Bonneville Power Administration (BPA). To date, the project manages seven WMUs across three counties. Such a large task can appear daunting; nevertheless, the AFWM has not only maintained a minimum habitat standard, but improved it through several habitat enhancement projects.

The first and largest project, The Goose Haven Wetland Enhancement Project (GHWEP), has been a shining example of what can be accomplished through hard work and ingenuity with limited resources. The project defies the purpose of the drainage district within which it is located by striving to keep water on the floodplain of the St. Joe River through the waterfowl nesting season. This project relies on the natural topography of the land to turn a five acre seasonal wetland into a 35-50 acre semi-permanent wetland. Waterfowl nesting and loafing islands were created along with deep water channels to recreate a wetland mosaic that has all but disappeared from the floodplain. Water level is controlled via a stop-log control structure allowing seasonal draining, which in turn allows hay to be removed from the floodplain. The hay removal is used in place of fire to prevent biomass accumulation and aids in noxious weed control. Perhaps the best part of this project is the fact that it cost no more than \$5,000 annually over the two year construction phase. Furthermore, maintenance is negligible with great results.

Other examples of low-cost, high-benefit projects on the Reservation include the Goose Haven Floodplain Improvement Project and the Elkhorn Flats Pond Restoration Project. Like the GHWEP, these projects have cost less than \$5,000 to implement, yet yield great habitat improvement on the landscape.

Habitat Improvement in the Ceded Territory has taken place on the Cougar Creek WMU located at

the confluence of the North Fork Cougar Creek and the Coeur d'Alene River. This former homestead had been overrun with common tansy (Tanacetum vulgare), a highly noxious, non-native weed that out-competes native vegetation in disturbed areas once introduced. The approximately 10 acres of meadows had become solid stands of common tansy following decades of neglect. This project utilized a cost-share program though the Inland Empire Cooperative Weed Management Area to acquire herbicide for tansy control and native grass seed to replant the area once the tansy was removed. The tansy has been eliminated in all but the periphery of the meadows, which are once again dominated by native grasses.



Photo of waterfowl nest taken this year at the Goose Haven project site.

These habitat enhancement projects highlight the abilities of the Albeni Falls Wildlife Mitigation Project and show that much benefit can be had with limited resources. If you would like to learn more about the great things being done by AFWM contact the Wildlife Program, or better yet swing by the project sites and check it out for yourself. ◆

When baked Alaska is the only item on the menu, will we be on thin ice?

By Bruce Kinkead, Fisheries Biologist

good deal of effort as a Fisheries Biologist working on a restoration project for the Coeur d'Alene Tribe is spent tracking the status and

trends of data such as stream temperature and stream discharge, and the biological response of fish and their food items. It is impossible to not notice from our own local data, and outside our watersheds that climatic changes appear to be happening on a local, regional, and global scale that are beyond normal weather fluctuations.

Last year shattered records in Spokane for the hottest summer since records began in 1881 with an average daily high and low temperature of 72.7 degrees, compared to the previous record of 71.3 set in 1922. In fact, the last three summers have been above average. These local conditions resulted in Hangman Creek going dry with water existing only in deep pools or behind beaver dams.

Other news from the Western US highlights California Fish and Game's plan to move fish into hatcheries to the save their genetic integrity in response to California's four year drought. Much of Glacier National Park was shut down because of the extensive wildfires. The mountains and rainforests of Olympic National Park had 15% normal snowpack during the winter of 2014/2015 coupled with abnormally hot and dry summer weather. This resulted in a shutdown of recreational fishing to protect anadromous fish that were stressed by low discharge and high temperatures. There were huge numbers of sockeye salmon fatalities last year from high temps as they made their way up the Columbia River system (see the recent April 2016 Columbia Basin Bulletin for example

http://www.cbbulletin.com/436358.aspx).

Regional models are predicting the unusually hot and dry summer of 2015 could be a new normal for the western U.S. Spring time conditions will occur a month earlier than what was once considered normal. Earlier snowmelt will decrease summer stream flow and increase temperatures which will stress fish populations.

News elsewhere in the Northern Hemisphere this winter points to a global trend that scientists call frightening. Recent scientific reports indicate that Arctic sea ice thickness has decreased 65% from 1975 to 2012. In an article called, "As the Arctic roasts, Alaska bakes in one of its warmest winters ever", Alaska's temperatures for January through February have been 10 degrees above normal with only 10% of normal snowfall. The Iditarod, the famous dog sled race, needed snow brought in by rail. Worse yet,

portions of the Arctic Ocean are experiencing temperatures 30 degrees F above normal. Weather patterns this winter in the European Alps show similar conditions where ski resorts are making snow just to have minimum operations.



U.S. and global temperatures are tracked in a NOAA database dating back more than a century (NOAA National Centers for Environmental Information, State of the Climate, published online http://www.ncdc.noaa.gov/sotc/). A summary of the trends for the Pacific Northwest is that the average annual air temperature has increased by about 1.3 degrees Celsius (+0.2°F/Decade) during the 121 year period of record; the warmest year on record occurred in 2015. Globally, 15 of the 16 warmest years (1880-2015) have occurred in the new millennium. The global trend describes a greatly accelerated warming since the 1970s. Weather patterns across the globe may be impacting more than just fish and wildlife. Humanity will see increased forest fires, water scarcity, impacts on recreation and food production.

Our restoration efforts have to consider potential climate change as a variable if we are to succeed in restoring fish and wildlife habitat locally. Efforts to restore our streams for cold water fishes such as the redband trout in Hangman Creek are focused on improving connectivity of the floodplain and the stream through a combination of large scale instream work and partnering with beaver. This leads to improved hydrologic processes and enhanced riparian vegetation communities.

Initial stream temperature data from the **k'wne' 'ulchiyark'wmntsut** restoration project in Hangman Creek indicates that activating relict

channels with partial shading from existing vegetation combined with beaver dam construction has lowered stream temperatures by as much as 5 degrees Celsius. This restored reach never exceeded 21 °C and only exceeded critical thresholds for redband trout 6.6% of time during the hottest months of last year's record breaking summer. The reach immediately downstream with no restoration work or beaver dams showed quite different conditions with temperatures reaching 27 °C and exceeding critical thresholds 40.4 % of the time during the same period.

Similar work is needed to extend these improvements to upstream and downstream reaches. No less than nine temperature monitoring locations and extensive ground water monitoring of the *k'wne'* 'ulchiyark'wmntsut restoration project will be utilized to track trends and assess the responses to restoration efforts. Increasing the scale of these restoration efforts may be the best way to insulate native species from the worst effects of climate change and ensure that future generations have continued access to culturally important resources.

Coeur d Alene Tribe partnering with EPA and Trout Unlimited to restore Hangman Creek

By Bruce Kinkead, Fisheries Biologist

he Environmental Protection Agency awarded the Coeur d'Alene Tribe \$75,000 in October 2015 to implement a large scale riparian restoration plan for Phases 1 and 2 of the Hangman Creek fisheries restoration project entitled *k'wne'* 'ulchiyark'wmntsut, which translates from the Coeur d'Alene language as it will make itself crooked again.

The grant proposal was co-written and is being administered by the Fisheries and Water Resources Programs. The grant program is linked to the Clean Water Act objectives of decreasing erosion and input of fine sediments into streams.

Allocation of funds will cover labor, plant materials, and plant protection cones and fencing. A full regime of riparian plants to provide bank stability, stream shading, and plant materials to support beaver is prescribed; including deciduous trees such as black cottonwood, aspen, alder, willows, herbaceous species,

and upland shrubs and conifers. Each plant has its own preference for moisture, so there are four planting zones based on soil conditions. Last fall planting began with 2500 trees, 2520 herbaceous plugs, and 120 potted willows. In addition to the planting, 2000 feet of wildlife exclusion fencing was installed. Additional work is scheduled for spring and fall 2016.

The Coeur d'Alene Tribe Fisheries Program and the Spokane Falls Chapter of Trout Unlimited also are partnered in a riparian enhancement effort that encompasses Phase 4 of the *k'wne'*

'ulchiyark'wmntsut project. Conservation of redband trout are the main emphasis for both parties. Funds from the national office of TU and fundraising by the Spokane Falls Chapter are expected to contribute \$9,000 toward the work. The riparian treatments and plant protection are similar in nature to the EPA funded project located immediately downstream. ◆



Wildlife exclusion fencing on Hangman Creek, provided by Trout Unlimited for Phase 4 of the k'wne' 'ulchiyark' wmntsut project, will provide needed protection to help establish native plants intended to shade the stream.

REWARD

\$ CATCH FOR CASH \$

MORE THAN \$12,000 IN REWARD PAYMENTS \$5 / fish for the first 1000 pike returned Tagged pike worth \$50 - \$500 / fish

Northern pike daily quota = UNLIMITED

Anglers are encouraged to harvest all captured pike



Northern Pike Research Reward Program

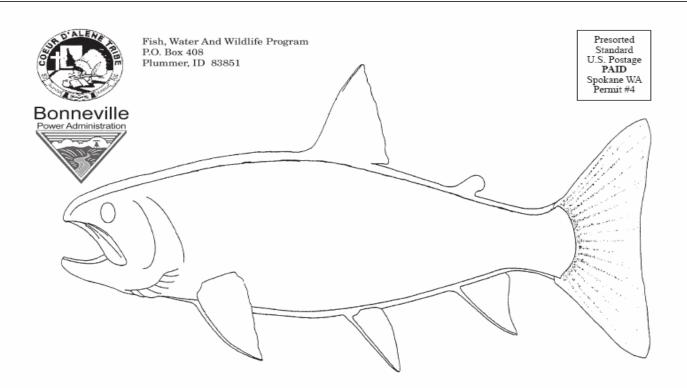
This program is part of an effort to manage pike populations, obtain more information on the diet, distribution, movement and abundance of this non-native species within the southern end of Coeur d'Alene Lake, and to conserve and recover other fish populations.

Uniquely numbered tags have been placed in the head of a number of pike in the southern end of Coeur d'Alene Lake and each pike returned with one of these tags is worth \$50-500. These tags will not be visible, so anglers are encouraged to turn in all captured pike.



For further information contact the Coeur d'Alene Tribe Fisheries Program:
(208) 686-5302

Pike must be turned in to the check station located Heyburn State at the Park Headquarters, Chatcolet Road, to be eligible. Instructions are posted at the check sta-All participants must have valid applicafishing licenses (including CDA Tribal fishing license). PROGRAM WILL BE IN EFFECT FROM OCTOBER 1 THROUGH MAY 31.





Join Us for Our Annual Water Awareness Week

www.facebook.com/cdatribe.fishandwildlife

May 10th – 13th 9:30am – 12:30pm daily

Visitors will have the opportunity to rotate through informational stations with opportunities to see how we trap and tag fish, age and measure trees, monitor water quality, identify plants, address erosion issues, learn to speak the Coeur d'Alene language and other hands on activities. This year's event will also include tribal elders as well as traditional drumming and singing. Bring a lunch and find a place to sit and eat by the creek after we wrap up at 12:30!

Directions:
Turn West off US HWY 95
onto Setters Rd
Turn Right on Rew Rd (Old
Hwy 95)
Proceed north
approximately 2 miles
Turn left onto Ford Road
Parking at the gravel pit